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ABSTRACT

In an effort to measure the economic impact of Dutchess Community College (DCC), in Poughkeepsie, New York, on Dutchess County, a study was undertaken of expenditures and jobs created in the county during fiscal year 1991-92. To measure the tangible economic impact, three major financial components were examined: direct expenditures by the college for the purchase of goods and services from local businesses, which totaled $6,549,875; direct expenditures of employees of DCC, which totaled $7,074,810; and direct expenditures of DCC students, which totaled $23,385,810. Through the application of a mathematical multiplier, used to estimate the secondary circulation of these direct expenditures, the total tangible economic impact of DCC on the county was calculated to be $92,526,212. In addition, DCC employed 415 full-time workers and an additional 326 full-time equivalent workers in the form of part-time employees and contractual services. Combined with the employment created by direct expenditures and the indirect business volume generated by those expenditures, a total of 3,331 full-time jobs in Dutchess County were estimated to have been affected by DCC spending in 1991-92. Finally, for every tax dollar spent in support of DCC, $13.10 was circulated in the local economy. Data tables, a description of the multiplier, and a breakdown of DCC's direct expenditures are included. A summarizing brochure is attached. (PAA)

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ED 363 372

THE ECONOMIC IMPACT OF DUTCHESS COMMUNITY COLLEGE

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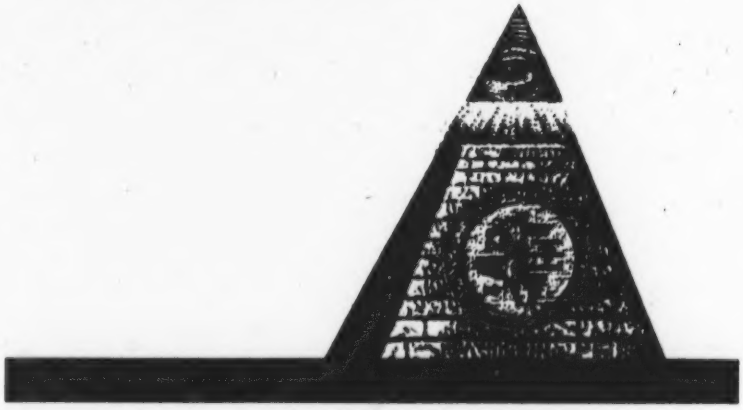

Dutchess Community College
Office of Planning & Institutional Research
March 1993

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INTRODUCTION

This is an analysis of the impact of Dutchess Community College on the economy of Dutchess County. It is based on the financial data of fiscal 1991-1992 at Dutchess Community College.

Colleges and universities are usually thought of solely as centers for education and enrichment. However, colleges and universities also have a unique effect on the economy of their service region.

Colleges and universities have two types of impact on the local economy: tangible and intangible. The tangible impact of Dutchess Community College is its direct and indirect business spending through purchasing goods and services in the local economy; the creation of local jobs; and the generation of income for residents.

The intangible impact is difficult to measure because it centers on the human capital effect. As people improve themselves educationally, they also enhance their earning and spending potential. The Dutchess County economy will, as a result, benefit by a larger volume of business, increased tax revenue, an improved quality of life, and a trained and educated workforce contributing to economic development. This intangible impact is reinforced by DCC's 35 years of service, and the more than 100,000 people who have taken credit courses here.

This study focuses on estimating the tangible economic benefits, or impact, of Dutchess Community College on the local economy.

METHODOLOGY

This study uses a model developed by Ryan and Malgieri (1992) for the National Council for Resource Development. This model has been used by more than 250 community colleges nationwide.

The economic impact models are based on a circular cash flow model as illustrated in Figure 1.

ECONOMIC IMPACT MODEL

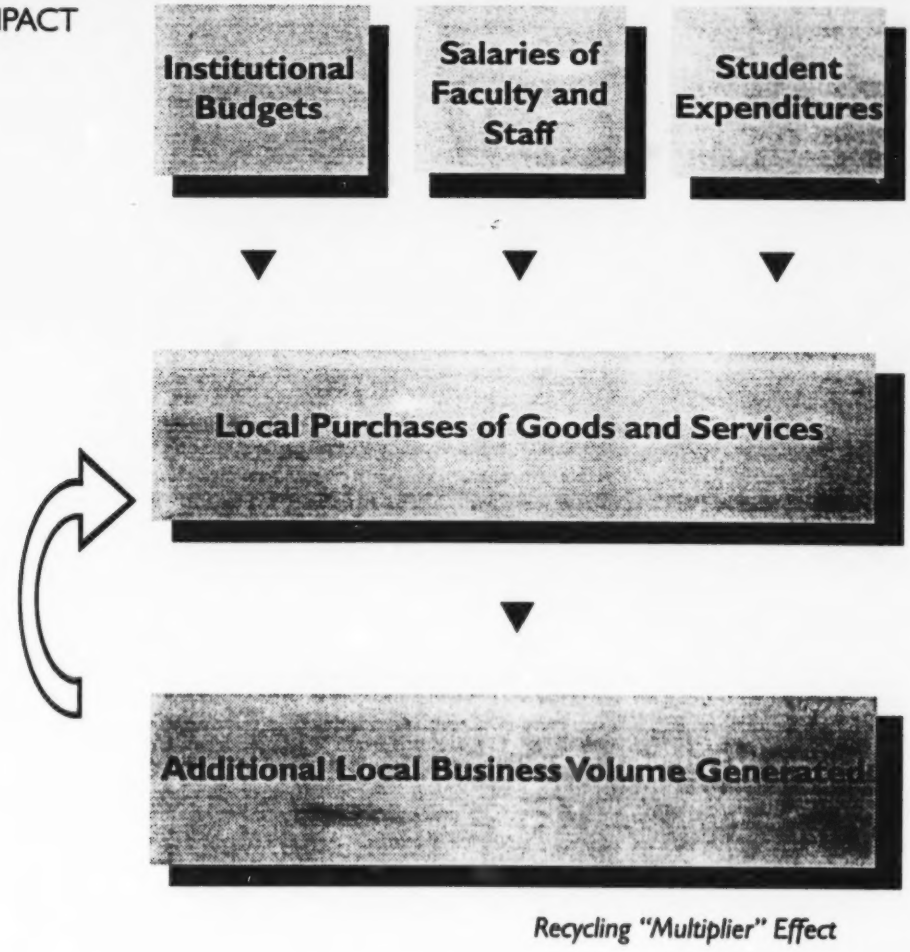


Figure 1. Basic components of an economic impact model

Methodology continued...

Local and external money enters the Dutchess economy through DCC. County funding of the College is local tax money. External sources include state appropriations, federal funding, grants, contracts, out-of-county chargebacks, and tuition and fees paid by out-of-county students.

The College circulates these funds through faculty and staff salaries and the purchase of goods and services to support College operations.

The Ryan model includes three major components to estimate the direct economic impact of Dutchess Community College on Dutchess County.

1. **College expenditures for the purchase of local goods and services.**
   This includes supplies, utilities, equipment, building projects and other contractual services purchased from local vendors. Salary payments to employees are excluded.

2. **Direct expenditures by College employees in Dutchess County.**
   Only the disposable income DCC pays its employees is included in this analysis, excluding withholding taxes and mandatory retirement deductions. The percentage of this disposable income that employees spent in Dutchess County was calculated for those employees who live in Dutchess County. The ratio came from the cost of living index published by the American Chamber of Commerce Researchers Association (Third quarter 1991). The out-of-county employees were estimated to spend $2,000 per year for lunch and gas.

3. **Direct expenditures of DCC students in Dutchess County.**
   Student expenditures were estimated based on costs related to their attendance at the institution, excluding payments for tuition and fees. The model suggests using the Federal Financial Aid Guidelines for students living at home as a dependent of their parents. The expenditures include books, college-related supplies, transportation, and an allowance for room and board.

THE CONCEPT OF THE MULTIPLIER

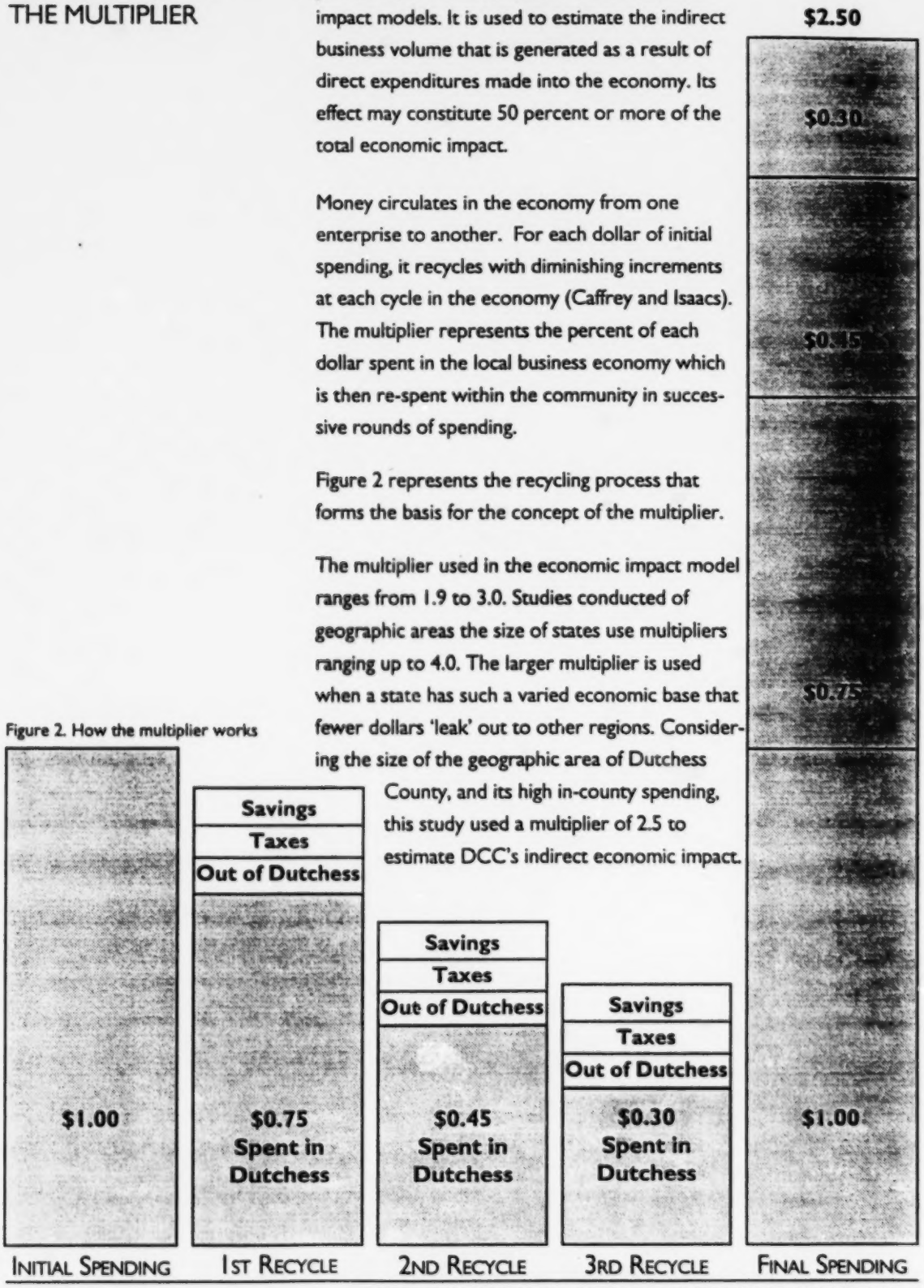
The multiplier is a key feature of all economic impact models. It is used to estimate the indirect business volume that is generated as a result of direct expenditures made into the economy. Its effect may constitute 50 percent or more of the total economic impact.

Money circulates in the economy from one enterprise to another. For each dollar of initial spending, it recycles with diminishing increments at each cycle in the economy (Caffrey and Isaacs). The multiplier represents the percent of each dollar spent in the local business economy which is then re-spent within the community in successive rounds of spending.

Figure 2 represents the recycling process that forms the basis for the concept of the multiplier.

The multiplier used in the economic impact model ranges from 1.9 to 3.0. Studies conducted of geographic areas the size of states use multipliers ranging up to 4.0. The larger multiplier is used when a state has such a varied economic base that fewer dollars 'leak' out to other regions. Considering the size of the geographic area of Dutchess County, and its high in-county spending, this study used a multiplier of 2.5 to estimate DCC's indirect economic impact.

Figure 2. How the multiplier works



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MAJOR FINDINGS

The impact of Dutchess Community College on the local economy of Dutchess County in 1991-1992 was estimated as follows:

College Expenditures	$ 6,549,875
Employee Expenditures	$ 7,074,810
Student Expenditures	$ 23,385,800
Total Direct Economic Impact	**$ 37,010,485**

More than 37 million dollars of the business volume in Dutchess County's economy in 1991-1992 was a direct result of spending by Dutchess Community College, its students, and employees.

These dollars were recycled through the county economy in several rounds of spending. Using a multiplier of 2.5 produces the following result:

Total Tangible Economic Impact ..... $ 92,526,212

In other words, more than $92 million business volume in Dutchess County in 1991-1992 was a direct or indirect result of the expenditures of Dutchess Community College, its students, and employees. Figure 3 illustrates this finding.

DCC creates jobs in Dutchess County

In addition to the business volume it generates, DCC also contribute a significant number of full-time and part-time jobs to Dutchess County's economy.

DCC employed 415 individuals in full-time positions in 1991-1992. The part-time employees and contractual services added up to the equivalent of another 326 full-time positions.

In addition to these jobs, direct College-related expenditures and the indirect business volume generated by those expenditures created additional employment. Economists estimate that .00007 full-time jobs are created for each dollar added directly to an economy (Caffrey & Isaacs, 1971).

Full-time equivalent employees	741
Full-time jobs relating to DCC spending	2,590
Total employment in affected by DCC spending	**3,331**

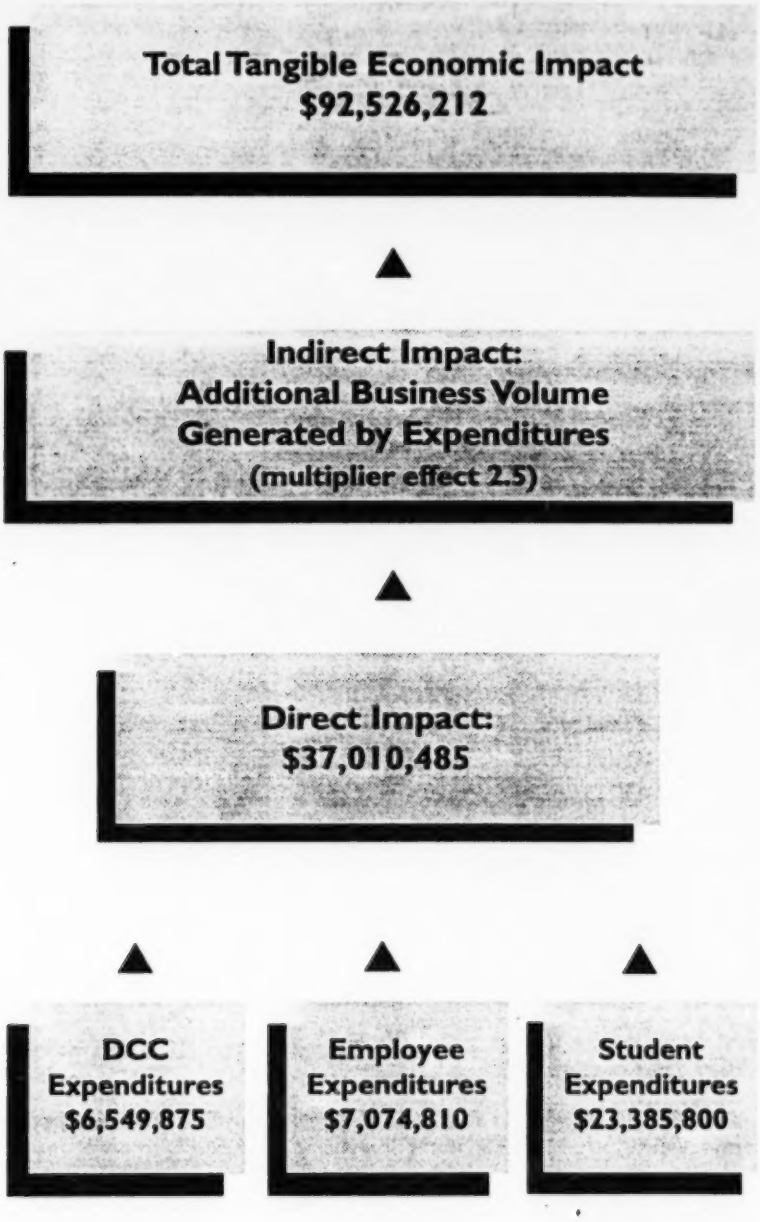

Figure 3. Total tangible economic impact of higher education on Dutchess County

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Return on taxpayer investment

In fiscal year 1991-1992, DCC received $7,065,679 from Dutchess County. The College generated a total revenue of $31,589,563 during that same fiscal year. The rate of return on taxpayer investment is:

$31,589,563/$7,065,679 ..... = 4.47 to 1.0

For every dollar of tax money invested in DCC, an additional $3.47 was channeled into the Dutchess County economy.

The total tangible economic impact per dollars for taxpayers support is:

$92,526,212/$7,065,679 ..... =13.10 to 1.0

For every tax dollar used to support DCC in 1991-1992, $13.10 business volume was generated in Dutchess County's economy.

CONSERVATIVE NATURE OF THE STUDY

This study (and the Ryan model in general) was constructed to provide a very conservative estimate of the economic impact of DCC in Dutchess County. This model does not attempt to measure the impact of real estate value fluctuation due to College spending; expansion of local banks' credit base due to College-related deposits; increases in collected sales and property taxes due to College-related expenditures; employee investments in local property; earnings of employees' family members; increased earning and spending power of DCC students; and other tangible but difficult-to-measure factors.

SUMMARY

Economic Impact studies are complex and theoretical. This report has presented, in a simplified fashion, the methodology and findings of the study of the economic impact of Dutchess Community College on Dutchess County. The data and calculations used to derive the findings may be found in the appendices.

APPENDIX 1 - THE CONCEPT OF THE MULTIPLIER

Caffrey and Isaacs have explained the multiplier concept as follows: Approximately 35 cents of a dollar spent in local business establishments by community residents is returned to the spenders as income. The balance, approximately 65 cents, is spent by local business establishments for materials and supplies from other local enterprises (including non-local taxes). But this is only the first round of transactions. The income accruing to local residents from this initial round is partially spent in the local business community. (Some is saved; some is paid out in taxes and fees to federal, state, and local governments; and some is spent outside the community.) Again, on the average, 35 cents of the dollar spent locally is returned in the form of income. This recycling process continues with diminishing increments at each stage. Eventually, income received by local residents from the initial dollar spent totals approximately 66 cents. The ration of the total income 66 cents, to the initial income received, 35 cents, is almost two to one, 1.9:1.0. Since it measures the multiple impact of an initial income stimulus, 1.9 is called the income multiplier. The concept is useful in demonstrating the various repercussions of direct stimuli, such as the described consumer spending and income. Similar indirect effects are carried over to local employment and to transactions between local business establishments. A multiplier of 1.9 is the average among those reported in the literature review, computed for differing geographic regions; the range being 1.2 to 3.0. The larger multiplier results because a state has such a varied economic base that fewer dollars "leak" out to other regions.

APPENDIX 2 - DIRECT ECONOMIC IMPACT CALCULATION FORMS

Dutchess Community College Economic Impact Study - 1991-1992

PART I. COLLEGE INFORMATION

Item *Instructions*

A. Total College Expenditures $12,817,474

The source of information should be the end of fiscal year 1992 audit. This figure must exclude salaries, internal items and transfers and taxes.

B. Percentage of college expenditures, as reported in #1, spent in county 50%

The source of this information is college business records. It may be computed as follows:

(1) Actual calculation of all in-county purchases for a fiscal year.

(2) Review three different months' total expenditures. Determine percentage spent in county.

C. Total Student Activity fees, expenditures $282,275

The source of this information should be the Student Activities office. The total should include intercollegiate athletic expenditures.

D. Total number of college employees 1683

d1. full-time 415

d2. part-time 1268

This information may be obtained from calendar year payroll records. (Use W-2 information or budget data.)

E. Full-time college employees who live in county 349

Percentage 84%

This information may be obtained by reviewing address information on payroll or in college directory. If part-time data is not readily available, use full-time percentage.

F. Total disposal income available to college employees $14,130,014

The source of this information is college business records. The figure is money paid directly to staff and does not include taxes and cost of employee benefits.

G. Total number of full-time students 3384

This information is available from end of fiscal year audit.

H. Total number of part-time students 4309

This information is available from end of fiscal year audit.

I. Average annual college-related expenditures by full-time students 3600

This information is available from the Financial Aid Office
The figure should exclude tuition and fees.

J. Average annual college-related expenditures by part-time students 2600

This information is available from the Financial Aid Office.
The figure should exclude tuition and fees.

PART II. PROJECT CALCULATIONS

Item *Instructions*

K. Total Student Government expenditures spent in county $141,138

This figure may be found by applying percentage
computed in #B to total reported in #C.

L. College expenditures spent in county $6,408,737

This figure may be found by applying percentage
computed in #B to total reported in #A.

M. Total in-county expenditures by the college $6,549,875

This figure may be computed by adding #K and #L.

N. Disposable income of in-county employees spent in-county on non-housing items $5,982,083

This figure may be obtained as follows:
Disposable income #F ..... $14,130,014 x

Percentage of in-county staff #E ..... *0.84 x*

Percentage of non-housing expenditures from annual study that reports composite cost of living: groceries, housing, utilities, transportation, health care and miscellaneous goods and services. ..... *0.72 x **

Percentage of in-county expenditures from Sales and Marketing Management magazine which reports "Population, Retail Sales, Effective Buying Income" residence. ..... *0.7 =*

* American Chamber of Commerce Researcher's Association, Cost of Living Index (Third Quarter, 1991)

O. Expenditures of out-of-county full-time employees spent in-county on non-housing items $132,000

This item may be obtained as follows:
Total number of out-of-county full-time employees ..... *66 x 2000*

P. Rental expenditures by full-time college staff living in county $960,727

This figure may be computed as follows:
Total full-time staff living in county ..... *349 x*

County percentage who rent from local County Planning Department. If several statistics are available, choose the lowest. ..... *0.31 x*
County mean annual rent from annual study of monthly rent of an apartment for middle management executive. ..... *$8,880 **
@740 x 12

Q. Total employee expenditures in county $7,074,810

The total in-county employee expenditures may be computed as follows:
#N + #O + #P

R. Total expenditures by full-time students $12,182,400

This figure is computed by the following method: #G x #I

S. Total expenditures by part-time students $11,203,400

This figure is computed by the following method: #H x #J

T. Total expenditures by students **$23,385,800**

This figure is computed by adding #S and #R.

PART III. LOCAL ECONOMIC IMPACT

Item *Instructions*

U. Total in-county expenditures by college **$6,549,875**

#M

V. Total employee expenditures in county **$7,074,810**

#Q

W. Total student expenditures in county **$23,385,800**

#T

X. Total initial economic impact of the college on the county **$37,010,485**

#U, #V, #W

Y. Multiplier effect **2.5**

2.5

Z. Total estimated economic impact **$92,526,212**

#X x #Y

REFERENCES

Caffrey, J. and Isaacs, H. *Estimating the Impact of a College or University on the Local Economy.* Washington, D.C.: American Council on Education, 1971.

Ryan, G.J. and Malgieri, P. (1992). *Economic Impact Studies in Community Colleges: The Short Cut Method* (2nd ed.). Resource Paper No. 48, National Council for Resource Development.

The American Chamber of Commerce, Third Quarter, 1991, Cost of Living Index.

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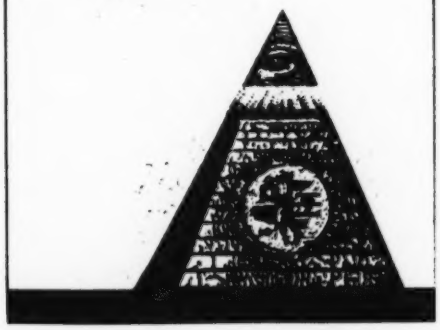
THE ECONOMIC IMPACT OF DUTCHESS COMMUNITY COLLEGE



INTRODUCTION

Colleges and universities are usually thought of solely as centers for education and enrichment. However, colleges and universities also have a unique effect on the economy of their service region. This effect is now measurable, using economic formulas that allow both direct and indirect factors to be calculated.

Dutchess Community College has served the Mid-Hudson region for more than 35 years. Its phenomenal growth, both in student population and level of service to the community, has broadened its impact on the local economy. The following illustrates the tangible direct and indirect economic effects Dutchess Community College has on the region. A complete technical report is available for those who are interested in a more in-depth explanation of the methodology and calculations used.

Dutchess Community College is supported in part by the taxpayers of Dutchess County. As such, it receives over $7 million of its $30+ million annual budget from Dutchess County. This investment of tax dollars represents the start of a circular cash flow in Dutchess County's economy that has a direct and extensive effect.

To examine the economic impact of Dutchess Community College on the County, three primary components are used:

1. **The College:** the direct expenditures by the College on goods and services provided by local businesses;
2. **Employees:** the direct expenditures by college employees in Dutchess County; and,
3. **Students:** the direct expenditures by DCC students in Dutchess County.

The impact of Dutchess Community College on the economy of Dutchess County in 1991-1992 was estimated as follows:

College expenditures	$ 6,549,875
Employee expenditures	$ 7,074,810
Student expenditures	$23,385,800
Total Direct Economic Impact	**$37,010,485**

Approximately $37 million circulating in Dutchess County's economy in 1991-1992 was a direct result of spending by Dutchess Community College, its employees, and students.

The direct economic impact can be examined again, using a multiplier of 2.5, developed to estimate a secondary circulation of these dollars in the local economy. This produces the following result: **Total Tangible Economic Impact of Dutchess Community College $92,526,212**

In other words, nearly $93 million of business volume in Dutchess County in 1991-1992 was generated by the expenditures of Dutchess Community College, its employees, and students.

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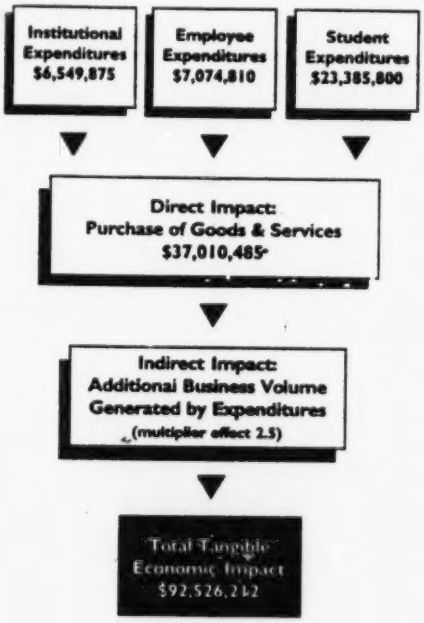
Total Tangible Economic Impact of DCC on Dutchess County


Institutional Expenditures $6,549,875
Employee Expenditures $7,074,810
Student Expenditures $23,385,800
Direct Impact: Purchase of Goods & Services $37,010,485
Indirect Impact: Additional Business Volume Generated by Expenditures (multiplier effect 2.5)
Total Tangible Economic Impact $92,526,212

The numbers are impressive. However, the College's impact on the region extends past this business volume. There are also a significant number of full- and part-time jobs directly related to Dutchess Community College.

Dutchess Community College employed 415 individuals in full-time positions in 1991-1992. The part-time employees and contractual services created the equivalent of an additional 326 full-time positions.

Along with these jobs, direct college-related expenditures and the indirect business volume generated by those expenditures created additional employment. Economists estimate that .00007 full-time jobs are created for each dollar added directly to an economy (Caffrey & Isaacs, 1971).

Full-time equivalent employees 741
Full-time jobs related to DCC spending 2,590
Total employment in Dutchess County affected by DCC spending **3,331**

What does this mean to the taxpayer? In fiscal year 1991-1992, DCC received $7,065,679 from Dutchess County. The College generated a total revenue of $31,589,563 during that same fiscal year. The rate of return on taxpayer investment:

$31,589,563/$7,065,679 ..... = 4.47 to 1.0

For every dollar of tax money invested in DCC, an additional $3.47 was channeled into the Dutchess County economy.

The total tangible economic impact, per dollar of taxpayer support, is:

$92,526,212/$7,065,679 ..... = 13.10 to 1.0

For every tax dollar spent in support of DCC in 1991-1992, $13.10 was circulated in the local economy.

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CONCLUSION

It is often said that education is a good investment. This analysis of the economic impact of Dutchess Community College on Dutchess County validates that philosophy. Dutchess Community College is a vital and growing organization, improving the quality of life in Dutchess County in many ways.

For a copy of the complete technical report on the Economic Impact of Dutchess Community College, please write to:

Dutchess Community College
Office of Planning and Institutional Research
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Dutchess Community College is a State University of New York Campus, located in Poughkeepsie, New York. It is sponsored by the Dutchess County Legislature, and is accredited by the Middle States Association of Colleges and Secondary Schools. Dutchess has 35 academic programs, and offers Associate's degrees in Arts, Sciences, and Applied Sciences.

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